

# Processing ENDF/B-VII.1 $\beta$ 3 Using NJOY

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# Minor NJOY Processing Issues

- NJOY-99.xxx/VIEWR went into a loop and filled up hard disk when processing Ti-46, 47,48,49,50 and V-51. Valid only for NJOY compiled with Portland Group Fortran. NJOY compiled with Intel Fortran and Lahey Fortran will crash.

Solution: S. Hoblit modified VIEWR, subroutine **axis3** to include ff. lines:

```
if (astp .eq. 0.0) then
  if(amin .le. 0.0) return
  if(amax .le. 0.0) return
endif
```

The above prevents VIEWR from generating a plot for a photon of zero energy with non-zero probability.

# Minor NJOY Processing Issues

- Two versions of NJOY, NJOY-99.368 and NJOY2010, were used to process VII.1beta3 neutron sublibrary.

## **Reason:**

Cl-35 and F-19 use R-Matrix Limited format in MF2 which only NJOY2010 could process presently.

## **Solution:**

NJOY2010 will be officially released in the near future after internal LANL paperwork is complete.

In the meantime, Skip is making NJOY2010 'look and feel' like the NJOY-99.xxx series.

# Minor NJOY Processing Issues

- NJOY-99.XXX incremented by one the ZAID of generated ACE files if input has ZAID suffix specified in two successive ACER runs.

## Example

```
'acer'  
-21 -28 0 32 27  
1 0 1 .73 / <== fast data, no listing, type-1 format (ASCII)  
'ENDF/B-VII.1beta3 ACE File Generation at 1500K for $matnum /  
$matnum 1500.0 /  
/ default: new format=yes, detailed photons=yes  
1e-5 2e+7 1/  
'acer'  
0 32 33 34 35  
7 1 1 .73 / <==  
'ENDF/B-VII.1beta3 ACE File Generation at 1500K for $matnum /  
'viewr'  
33 36 /  
'stop'
```

## Result

```
H-1: 1001.71c ➡ 1002.71c  
H-2: 1002.71c ➡ 1003.71c  
H-3: 1003.71c ➡ 1004.71c  
  
.....  
  
Fm-255:  
100255.71c ➡ 100256.71c
```

Workaround: Specify suffix either in the first or second ACER run only but not in both!

# Minor NJOY Processing Issues

Solution:

- 1) Use a negative number for the suffix when running with iopt=7 to preserve the existing zaid.

```
'acer'  
0 32 33 34 35  
7 1 1 -.73 /
```

- 2) Apply A. Trkov's patch

```
*/  
*ident upnea074  
*/ acer      A. Trkov, June 2011  
*/          zaid is re-defined incorrectly when editing ace files if  
*/          the original suffix is greater than 0.50  
*d acer.17652  
    iza=ifix(zaid+0.001)  
*/
```

A small number is added to ZAID to avoid integers rounded down, due to numerical precision, when the real value is just below the true integer.

# Summary and Conclusion

- ENDF/B-VII.1beta3 was successfully processed using NJOY-99.368 and NJOY2010.
- NJOY-99.368 had some minor processing issues but were immediately addressed by Skip Kahler and Andrej Trkov.